ALBERTA INNOVATES

AGRICULTURE AND ENVIRONMENT

BIOINDUSTRIAL AND CIRCULAR INNOVATION

BIOINDUSTRIAL MATERIALS

FUNDING DETAILS

Biodegradable Seed Coatings

TerraVerdae Bioworks is a Canadian cleantech company that has developed world-leading biopolymer technology based on polyhydroxyalkanoates (PHAs) - polymers that are bioderived, naturally biodegradable and offer sustainable solutions to the pollution problems of conventional polymers and plastics. TerraVerdae's planet-friendly products are used in adhesives, food packaging, agricultural coatings, and personal care markets.

This project will develop advanced biodegradable coatings for seeds that will enhance efficiency, help maintain soil health, and reduce GHG emissions associated with crop production, by delivering environmentally safe and sustainable coating technology.

RECIPIENT:
TerraVerdae Bioworks Inc.

PARTNERS:
Barraca Falero

TOTAL BUDGET:
$1,000,000

AI FUNDING:
$250,000

PROJECT DATES:
April 2023 – March 2026

PROJECT TRL:
Start: 4
End: 8

APPLICATION

Seed coatings are widely used in the crop industry and provide a variety of benefits including adding weight and uniformity to light irregular seeds making them easier to handle, seed protection, dust reduction, colour coding for seed identification, as well as delivery of plant beneficial microbes (PBMs) and micronutrients with accuracy and precision for germination and emergence.

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PROJECT GOALS

- Use TerraVerdae's biobased and biodegradable PHA polymer technology to design seed coatings that will make a significant contribution towards meeting crop industry sustainability goals in areas of soil health, nutrient use efficiency, and carbon footprint.
- Document the performance and benefits of advanced prototype coatings on common Alberta crops (canola, wheat, cover crops) in controlled growth chambers and test plots, and then move to field trials in preparation for commercial readiness.

BENEFITS TO ALBERTA

- Maintain Alberta's world-class reputation in advanced agricultural practices, particularly in the area of environmentally sound and sustainable crop production.
- Reduce agriculture related environmental damage (soil contamination, fertilizer run-off) and GHG emissions.
- Build TerraVerdae's business case for construction of a commercial scale PHA production facility in Alberta.
- Form the centre for a hub of biomaterials production in Alberta, creating hundreds of direct skilled positions and generate more than $500 million in annual revenues

10 Students Trained

8 Patents

3 Project Jobs

50 Future Jobs

5 New Products/Services

1 Spinoff Companies

100 kt/yr Future GHGs Reduced

CURRENT STATUS

APRIL 2025 - ACTIVE

A series of prototype coatings have been designed and that have been applied to a range of seeds, including canola, soy, corn, wheat, and oats. Evaluations for germination and seedling health are in progress, and the leading candidates will be further optimized and progressed to field testing.